

TABLE 1.—Averages, departures and extremes of atmospheric pressure at sea level, 8 a. m. (seventy-fifth meridian). North Atlantic Ocean, November, 1930.

Stations	Average pressure	Departure	Highest	Date	Lowest	Date
	<i>Inches</i>	<i>Inch</i>	<i>Inches</i>		<i>Inches</i>	
Julianehaab, Greenland	29.62	( )	30.20	15th	28.90	24th.
Belle Isle, Newfoundland	29.89	+0.01	30.36	12th	29.06	26th.
Halifax, Nova Scotia	30.14	+0.19	30.62	4th	29.34	27th.
Nantucket	30.17	+0.15	30.74	29th	29.26	25th.
Hatteras	30.19	+0.12	30.76	29th	29.58	25th.
Key West	30.09	+0.04	30.28	28th	29.96	16th.
New Orleans	30.16	+0.01	30.58	1st	29.76	16th.
Cape Gracias, Nicaragua	29.92	+0.02	29.98	6th	29.84	3d.
Turks Island	30.05	+0.06	30.18	29th	29.94	3d.
Bermuda	30.14	+0.06	30.56	30th	29.56	5th.
Horta, Azores	30.19	+0.09	30.58	6th	29.70	20th
Lerwick, Shetland Islands	29.58	+0.12	30.25	17th	28.87	26th.
Valencia, Ireland	29.81	+0.08	30.75	11th	28.84	2d.
London	29.85	+0.09	30.72	12th	28.92	2d.

<sup>1</sup> No normal available.

<sup>2</sup> Based on other date or dates.

<sup>3</sup> From normals shown on Hydrographic Office Pilot Charts, based on observations at Greenwich mean noon, or 7 a. m., seventy-fifth meridian time.

<sup>4</sup> From normals based on 8 a. m. observations.

Charts VIII to XI cover the period from the 2d to 5th, inclusive, and show the disturbance off the American coast as well as that in the vicinity of Europe.

On the 6th the European Low was central in the English Channel, and westerly gales prevailed as far west as the twentieth meridian. On the same day Father Point, Quebec, was also near the center of a depression and winds of force 7 and 8 were reported by vessels between the thirty-fifth and forty-seventh parallels. On the 7th conditions similar to those of the previous day prevailed off the coasts of Canada and New England, while on the 7th as well as the 8th the "norther" previously referred to, was in southern waters.

On the 8th westerly gales occurred over the middle section of the northern steamer lanes, while on the 9th and 10th comparatively moderate weather was the rule over the greater part of the ocean.

From the 11th to 16th there ensued a period of heavy weather that reached its greatest intensity on the 13th and 14th when the storm area covered the region from the thirty-fifth to forty-fifth parallels and thirty-fifth to fifty-fifth meridians, where winds of hurricane force were

reported by a number of vessels. By the 16th this disturbance had decreased in intensity, although moderate to strong gales were still encountered in the northern steamer lanes.

From the 19th to 23d comparatively low pressure occurred over the region usually covered by the North Atlantic High, the barometer at Horta reaching its minimum reading of 29.70 inches on the 20th, when the center of this Low area was near 50° N., 32° W. The Low moved slowly eastward, accompanied by moderate to strong gales, and on the 22d was over the North Sea, with barometric readings of from 28.80 to 28.94 inches reported by stations on the east coasts of England and Scotland.

On the 23d a Low was central near Belle Isle, Newfoundland, and a second near 55° N., 28° W. From that date until the 26th winds of gale force prevailed over the middle and eastern sections of the steamer lanes.

On the 25th Nantucket was near the center of a depression, and while moderate weather was reported at time of observation near the center, the region between the thirtieth and thirty-fifth parallels was swept by strong westerly gales with a comparatively uniform increase in barometer readings from the fortieth to thirtieth parallels. On the 26th the center was near Father Point, where the barometer reading was 28.88 inches, and westerly gales were still reported from the vicinity of Hatteras, while moderate conditions prevailed over the region between these two points.

By the 27th this Low had apparently begun to fill in, while there were indications of a secondary forming about halfway between the Bermudas and Nantucket, although it was impossible to determine the position accurately, due to lack of observations. On this day the storm area covered the greater part of the region between the thirtieth and fortieth parallels, and the fifty-fifth and seventy-fifth meridians.

From the 28th to 30th northeast trades of force 7 and 8 were reported by vessels near the east coast of Cuba.

On the 29th westerly to northwesterly gales, accompanied by comparatively high pressure, occurred between the Bermudas and Nova Scotia, and on the 30th between the fortieth meridian and east coast of Newfoundland.

#### OCEAN GALES AND STORMS, NOVEMBER, 1930

Vessel	Voyage		Position at time of lowest barometer		Gale began	Time of lowest barometer	Gale ended	Lowest barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Highest force of wind and direction	Shifts of wind near time of lowest barometer
	From—	To—	Latitude	Longitude									
NORTH ATLANTIC OCEAN													
Sagaporack, Am. S. S.	New York	Copenhagen.	58 27 N	27 00 W	Oct. 31	Noon, 1	Nov. 2	28.63	S	NE, 11	N	11	S-E-N.
San Benito, Br. S. S.	Castilla	Boston	16 10 N	86 54 W	Nov. 2	11 a., 2	do	29.90	W	W, 9	W	9	Steady.
Gonzenheim, Ger. S. S.	Newcastle-on-Tyne.	Baltimore	35 47 N	65 32 W	do	4 a., 2	do	29.97	NE	W, 3	NNE	10	W-N.
Hoflaan, Du. S. S.	Rosario	Hull	43 27 N	9 04 W	do	2	Nov. 4	29.61	SW	SW, 10	NW	12	SW-NW.
San Macedonio, Br. S. S.	River Humber.	Mexico	48 30 N	11 00 W	Nov. 1	8 a., 2	Nov. 5	29.41	SW	W, 9	N	11	WSW-NW.
Hastings, Am. S. S.	Pensacola	Bremen	36 32 N	67 41 W	Nov. 3	10 p., 3	Nov. 4	29.95	E	E, 7	S	10	E-SE-S.
Georgia, Dan. S. S.	Norfolk	Rotterdam	49 36 N	12 40 W	Nov. 2	Noon, 3	Nov. 3	29.33	W	NNW, 10	NW	11	Steady.
Aquitania, Br. S. S.	Southampton	New York	48 51 N	28 54 W	Nov. 4	6 a., 4	Nov. 4	29.26	S	WSW, 12	NW	12	WSW-WNW.
Henri Jaspard, Belg. S. S.	Antwerp	do	50 52 N	24 00 W	Nov. 1	2 p., 4	Nov. 5	28.75	SW	W, 10	NW	12	WSW-W-NW
Lotte Leonhardt, Ger. S. S.	Ardrossan	Tampico	44 00 N	12 30 W	Nov. 5	5	Nov. 6	29.81	W	W, 11	NNW	11	W-NW.
Sneaton, Br. S. S.	St. Vincent	Rotterdam	49 02 N	4 39 W	do	Noon, 5	do	29.32	S	SSE	NE	10	SSE-ESE.
Bellflower, Am. S. S.	Liverpool	Boston	42 47 N	66 30 W	Nov. 6	Noon, 6	Nov. 7	29.57	WSW	WSW, 9	NW	10	W-NW.
Marie Leonhardt, Ger. S. S.	Norfolk	Murmansk	62 05 N	5 56 W	Nov. 7	7	Nov. 8	28.72	SW	SW, 8	W	11	WSW-WNW.
Valerius, Ital. S. S.	Montreal	Genoa	35 56 N	5 47 W	do	Noon, 7	Nov. 9	30.04	E	E, 6	ENE	9	Steady.
City of Joliet, Am. S. S.	New Orleans	Havre	40 25 N	54 00 W	Nov. 10	11 p., 10	Nov. 15	29.38	NNW	NNW, 7	WNW	12	N-NNW.
Boschdijk, Du. S. S.	Port Said	Boston	43 26 N	46 29 W	do	4 p., 11	Nov. 12	29.61	SSE	S, 9	NNE	8	do
Nessian, Br. S. S.	Swansea	Montreal	54 00 N	33 05 W	Nov. 11	6 p., 11	Nov. 11	29.57	S	S, 9	NW	10	S-W-NW.
Dresden, Ger. S. S.	Cobh	New York	44 50 N	45 38 W	Nov. 12	12	Nov. 14	29.84	NE	NE, 10	NNE	10	NE-NNE.
Lotte Leonhardt, Ger. S. S.	Ardrossan	Tampico	35 34 N	41 50 W	do	13	Nov. 15	29.63	S	WSW, 11	W	12	do
Murex, Br. S. S.	Rouen	Key West	36 24 N	40 45 W	do	10 p., 13	Nov. 14	29.14	S	SSW, 11	WSW	12	Steady.
Conte Grande, Ital. S. S.	Gibraltar	New York	37 53 N	41 30 W	Nov. 13	2 a., 14	do	28.78	SSE	NW, 10	NW	12	SSE, 12
Aden Maru, Jap. S. S.	Glasgow	Norfolk	44 03 N	39 31 W	Nov. 14	Noon, 15	Nov. 17	28.91	S	N, 10	W	11	ESE-E-N.
Jalapa, Am. S. S.	Boston	Manchester	54 11 N	27 20 W	Nov. 16	4 p., 16	Nov. 16	29.56	E	E, 12	SSE	12	ESE-SSE.
Natirar, Am. S. S.	Bremen	Boston	47 42 N	36 04 W	Nov. 19	11 p., 19	Nov. 22	29.18	NNW	NNW, 7	NW	10	SW-W-NW

## Ocean gales and storms, November, 1930—Continued

Vessel	Voyage		Position at time of lowest barometer		Gale began	Time of lowest barometer	Gale ended	Lowest barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Highest force of wind and direction	Shifts of wind near time of lowest barometer
	From—	To—	Latitude	Longitude									
NORTH ATLANTIC OCEAN—Continued													
Ambridge, Am. S. S.	Antwerp	New York	49 31 N	40 01 W	Nov. 22	Nov.	Nov. 24	29.50	NW	NW, 10	WNW	W, 10	W-WNW
Tiger, Nor. S. S.	Oslo	do	57 00 N	23 40 W	Nov. 23	8 p., 23	do	29.91	S	WSW, 9	W	WSW, 10	SSW-WSW.
Japan Arrow, Am. S. S.	New York	Canal Zone	37 45 N	73 41 W	Nov. 25	8 a., 25	Nov. 27	29.41	W	W, 7	WNW	W, 11	Steady.
Examalia, Am. S. S.	Gibraltar	New York	36 58 N	56 45 W	Nov. 26	6 p., 26	Nov. 29	29.72	S	S, 10	N	NE, 10	S-SW-W.
Canadian Leader, Br. S. S.	Canal Zone	Boston	17 51 N	75 08 W	Nov. 28	6 a., 28	Nov. 30	29.88	NE	NE, 7	E	NE, 8	Steady.
W. C. Teagle, Am. S. S.	Aransas Pass	do	27 26 N	94 26 W	do	4 p., 29	Nov. 29	30.00	SE	SE, 8	SE	SE, 8	Do.
Tiger, Nor. S. S.	Oslo	New York	48 53 N	47 48 W	Nov. 29	7 p., 29	Nov. 30	29.25	NNE	NE, 11	NW	NE, 12	NE-NW.
Bremen, Ger. S. S.	Cherbourg	do	47 22 N	36 25 W	do	8 p., 29	do	29.52	SSW	SW, 7	WNW	NE, 11	do
Ninian, Br. S. S.	Liverpool	Boston	50 00 N	45 23 W	do	11 p., 29	Dec. 3	29.01	NW	N, —	WNW	NW, 12	N-W-SW.
NORTH PACIFIC OCEAN													
Petricola, Br. S. S.	Saito Zaki	San Francisco	40 05 N	153 40 E	Oct. 31	4 a., 1	Nov. 1	29.37	NNE	S, 4	NNE	NNE, 9	S-NNE.
San Julian, Am. S. S.	San Pedro	Balboa	16 00 N	94 50 W	do	4 p., 1	Nov. 2	29.91	NNE	NNW, 9	N	NNW, 10	N-NW-N.
Broad Arrow, Am. S. S.	San Pedro	do	14 23 N	97 18 W	do	Mdt., 31	Nov. 4	29.96	NNE	ENE, —	N	NE, 10	Steady.
Admiral Farragut, Am. S. S.	Seattle	Kodiak	59 00 N	152 00 W	Nov. 1	6 a., 1	Nov. 1	29.64	NW	NW, 9	NW	NW, 9	Do.
Starr, Am. S. S.	Seward	Aleutian Is.	53 50 N	167 20 W	do	4 p., 1	Nov. 2	29.14	SE	SE, 8	S	SE, 9	do
Chief Capilano, Br. S. S.	Shanghai	Vancouver	48 00 N	173 00 E	do	4 a., 2	Nov. 3	29.24	SSE	W, 6	N	W, 11	S-SW-W.
California, Am. S. S.	Columbia R.	Shanghai	50 30 N	178 45 E	Nov. 2	10 a., 2	do	29.15	S	SW, 8	WNW	WNW, 11	SW-WNW.
Admiral Farragut, Am. S. S.	Kodiak	Seattle	59 06 N	150 50 W	Nov. 4	10 p., 5	Nov. 5	29.91	NE	NE, 10	E	NE, 12	NE-E-SE.
Tacoma, Am. S. S.	Tacoma	Yokohama	50 45 N	136 30 W	do	—, 6	Nov. 6	29.37	ESE	ESE, 5	WSW	SW, 10	do
Olympia Maru, Jap. M. S.	Yokohama	Seattle	45 46 N	174 21 E	Nov. 7	Noon, 7	Nov. 8	29.23	W	W, 7	NW	WNW, 10	W-NW.
Maliko, Am. S. S.	Puget Sound	Hawaiian Is.	48 20 N	123 00 W	Nov. 8	7 a., 8	do	29.72	SSE	SSE, 8	SW	SSE, 8	SSE-S.
Chief Capilano, Br. S. S.	Shanghai	Vancouver	49 45 N	138 36 W	Nov. 9	6 p., 9	Nov. 10	29.20	SSW	SSW, 7	W	WSW, 9	SE-S-SSW.
Pres. Garfield, Am. S. S.	San Francisco	Kobe	26 56 N	170 30 W	Nov. 10	1 a., 10	Nov. 11	29.88	N	N, 7	NE	N, 9	WSW-N.
Dalblair, Br. S. S.	Vancouver	Shanghai	50 03 N	178 42 E	do	4 p., 12	Nov. 12	29.30	S	SSE, 8	NE	S, 10	S-SSE-NE.
San Pedro Maru, Jap. S. S.	Yokohama	San Francisco	39 00 N	161 42 W	do	Noon, 11	do	30.19	NE	NE, 9	SE	NE, 9	NE-ENE.
Columbia Maru, Jap. S. S.	Vancouver	Yokohama	51 45 N	168 55 W	Nov. 11	6 a., 13	Nov. 13	29.68	—	SW, —	W	SSW, 10	SSW-SW.
Tacoma, Am. S. S.	Tacoma	do	50 30 N	171 24 W	do	4 p., 12	Nov. 14	29.39	SSW	SW, 10	W	S, 10	S-SW-WSW.
Pres. Taft, Am. S. S.	Puget Sound	do	41 11 N	148 42 E	Nov. 12	Noon, 12	Nov. 12	29.47	WNW	WNW, 7	W	W, 10	Steady.
Golden Tide, Am. S. S.	Hong Kong	San Francisco	43 31 N	136 45 W	Nov. 14	Mdt., 15	Nov. 16	29.60	W	NW, 10	NNW	NW, 10	W-NNW.
Dalblair, Br. S. S.	Vancouver	Shanghai	45 40 N	156 22 E	Nov. 17	10 p., 17	Nov. 18	29.38	SSE	W, 11	WNW	WNW, 12	SSE-N.
Ayala Maru, Jap. S. S.	Milke	Tacoma	44 50 N	161 10 E	do	3 p., 18	Nov. 19	29.51	SE	W, 10	WNW	W, 11	1 pt.
Starr, Am. S. S.	Seward	Aleutian Is.	58 56 N	152 25 W	do	2 p., 17	do	28.40	NE	NE, 7	W	NE, 10	do
Manila Maru, Jap. S. S.	Yokohama	Vancouver	45 50 N	165 30 E	Nov. 18	8 p., 18	do	29.44	W	W, 10	WNW	W, 10	W-NW-NNW
Tyndareus, Br. S. S.	Yokohama	Victoria	39 44 N	150 57 E	Nov. 20	Mdt., 21	Nov. 22	29.60	SE	SSE, 8	SW	SSE, 9	SSE-S.
do	do	do	50 03 N	167 20 W	Nov. 24	10 p., 26	Nov. 27	28.55	SSE	S, 9	SE	E, 9	E-SE-S.
Dalblair, Br. S. S.	Victoria	Shanghai	41 40 N	142 38 E	Nov. 21	10 p., 21	Nov. 22	29.50	W	W, 10	W	W, 10	Steady.
Pres. Madison, Am. S. S.	Yokohama	Seattle	49 50 N	156 45 W	Nov. 22	2 p., 25	Nov. 25	29.60	SSE	NW, 7	W	NNE, 9	NNW-W.
San Anselmo, Am. S. S.	New Port News	Los Angeles	15 16 N	93 35 W	Nov. 27	10 a., 27	Nov. 27	29.91	NNW	NNW, —	NW	NNW, 9	Steady.
Admiral Farragut, Am. S. S.	Seattle	Kodiak	58 29 N	152 35 W	Nov. 28	—, 28	Nov. 30	29.59	NNE	NNE, 6	NE	NE, 9	Do.
SOUTH PACIFIC OCEAN													
Lina L. D., Fr. S. S.	San Pedro	Port Pirie	35 32 S	138 16 E	Nov. 3	Noon, 3	Nov. 4	29.41	NNE	—	WSW	WSW, 12	do

## NORTH PACIFIC OCEAN

By WILLIS E. HURD

**Atmospheric pressure.**—Pressure over the most of the North Pacific Ocean in November did not change very materially from that of October, on the average, except over the western waters of the Gulf of Alaska, where there was a considerable fall. Whereas in the previous month the Aleutian Low stretched as a shallow depression from the Gulf far westward into the Bering Sea, in November it was centered as a fairly energetic cyclone near Kodiak, where the average pressure was 29.44 inches, or a tenth of an inch below the normal. At other points in the Gulf of Alaska and in the Bering Sea, as shown by Table 1, the average pressures were slightly above the normal.

The North Pacific anticyclone persisted practically throughout the month over the eastern part of the ocean in middle latitudes. Along the central meridians high pressure was occasionally displaced by moderate depressions during the first two decades, and prevailing so throughout the last of the month. Anticyclonic conditions for the most part overspread the western waters of the ocean between latitudes 20° and 40° N.,

though interspersed by occasional and rather unimportant depressions between Guam and the Asiatic mainland.

The following table gives the principal barometric data for several island and coast stations in west longitudes.

TABLE 1.—Averages, departures, and extremes of atmospheric pressure at sea level at indicated hours, North Pacific Ocean and adjacent waters, November, 1930

Stations	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	Inches	Inch	Inches		Inches	
Point Barrow 1	30.08	—	30.76	3d	29.16	14th
Dutch Harbor 1	29.65	+0.06	30.34	24th	29.04	17th
St. Paul 1	29.71	+0.09	30.58	24th	28.92	13th
Kodiak 1	29.44	—0.10	30.42	12th	28.30	18th
Midway Island 1	30.08	+0.01	30.26	18th	29.80	30th
Honolulu 1	29.96	—0.06	30.12	13th	29.76	25th
Juneau 1	29.79	+0.03	30.74	22d	28.63	15th
Tatoosh Island 1	30.08	+0.11	30.72	21st	29.01	15th
San Francisco 1	30.08	—0.02	30.41	20th	29.68	16th
San Diego 1	30.01	+0.01	30.27	20th	29.75	13th

1 P. m. for average; a. m. and p. m. for extremes.

2 For 29 days.

3 A. m. and p. m. observations.

4 Corrected to 24-hour mean.